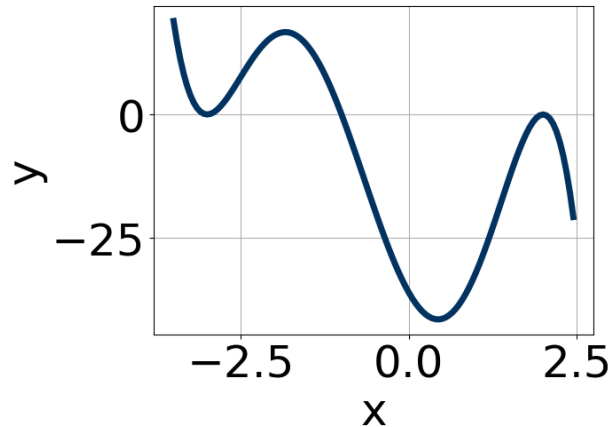


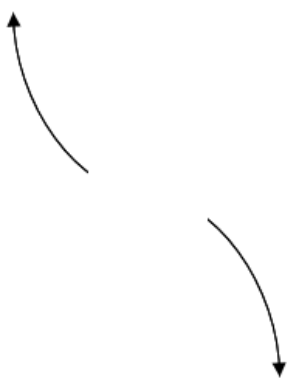
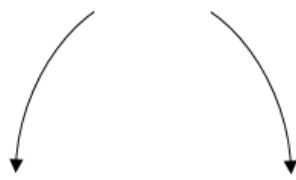
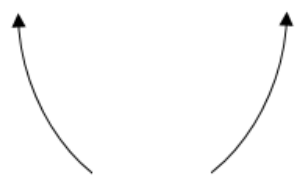
1. Which of the following equations *could* be of the graph presented below?

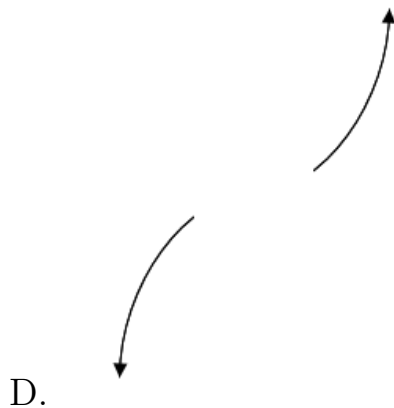


- A. $19(x - 2)^{10}(x + 3)^6(x + 1)^8$
 B. $-18(x - 2)^{10}(x + 3)^6(x + 1)^{11}$
 C. $-19(x - 2)^8(x + 3)^9(x + 1)^{10}$
 D. $13(x - 2)^{10}(x + 3)^{10}(x + 1)^5$
 E. $-4(x - 2)^{10}(x + 3)^5(x + 1)^5$

2. Describe the end behavior of the polynomial below.

$$f(x) = 4(x + 6)^4(x - 6)^9(x + 9)^3(x - 9)^3$$

- A. 
- B. 
- C. 



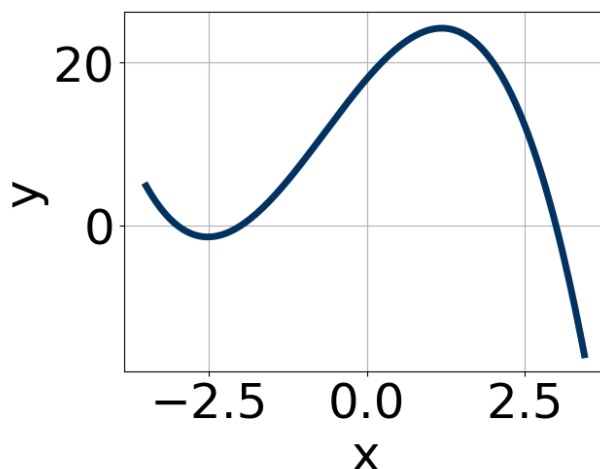
E. None of the above.

3. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$-3 - 5i \text{ and } -4$$

- A. $b \in [-1, 5], c \in [8, 9.7], \text{ and } d \in [16, 22]$
- B. $b \in [-1, 5], c \in [6.7, 8.6], \text{ and } d \in [10, 14]$
- C. $b \in [-15, -8], c \in [56.1, 58.3], \text{ and } d \in [-143, -134]$
- D. $b \in [6, 14], c \in [56.1, 58.3], \text{ and } d \in [130, 141]$
- E. None of the above.

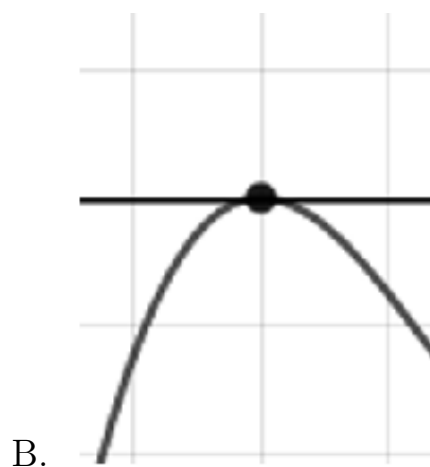
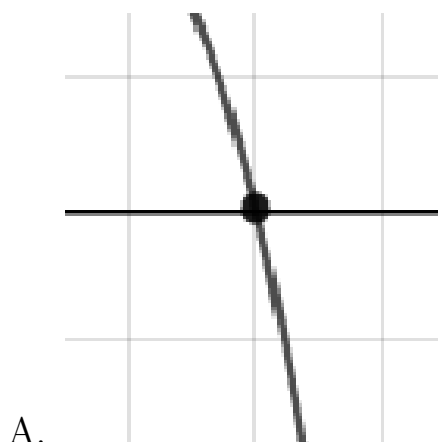
4. Which of the following equations *could* be of the graph presented below?



- A. $7(x + 2)^6(x + 3)^{11}(x - 3)^7$
- B. $-10(x + 2)^{10}(x + 3)^9(x - 3)^9$
- C. $11(x + 2)^9(x + 3)^9(x - 3)^9$
- D. $-2(x + 2)^9(x + 3)^{11}(x - 3)^5$
- E. $-5(x + 2)^4(x + 3)^8(x - 3)^9$

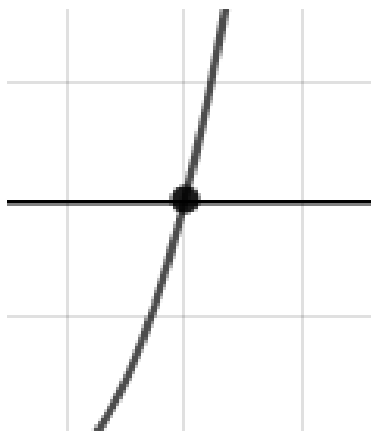
5. Describe the zero behavior of the zero $x = -6$ of the polynomial below.

$$f(x) = -9(x - 6)^9(x + 6)^{10}(x + 2)^9(x - 2)^{12}$$





C.



D.

E. None of the above.

6. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$-2, \frac{-7}{3}, \text{ and } \frac{3}{2}$$

- A. $a \in [5, 11], b \in [16, 20], c \in [-14, -9],$ and $d \in [40, 47]$
 B. $a \in [5, 11], b \in [-12, -2], c \in [-33, -27],$ and $d \in [40, 47]$
 C. $a \in [5, 11], b \in [-43, -32], c \in [63, 68],$ and $d \in [-47, -37]$
 D. $a \in [5, 11], b \in [-21, -14], c \in [-14, -9],$ and $d \in [40, 47]$
 E. $a \in [5, 11], b \in [16, 20], c \in [-14, -9],$ and $d \in [-47, -37]$

7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$-4 - 3i \text{ and } -3$$

- A. $b \in [11, 19], c \in [48.36, 49.78],$ and $d \in [72.6, 77.1]$
 B. $b \in [0, 7], c \in [4.02, 6.83],$ and $d \in [7.9, 9.5]$
 C. $b \in [0, 7], c \in [6.29, 9.06],$ and $d \in [11.8, 14.7]$

D. $b \in [-16, -10]$, $c \in [48.36, 49.78]$, and $d \in [-76, -71.8]$

E. None of the above.

-
8. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{-7}{5}, \frac{-1}{4}, \text{ and } \frac{3}{5}$$

A. $a \in [100, 104]$, $b \in [-230, -224]$, $c \in [129, 136]$, and $d \in [-21, -15]$

B. $a \in [100, 104]$, $b \in [-177, -171]$, $c \in [30, 38]$, and $d \in [20, 32]$

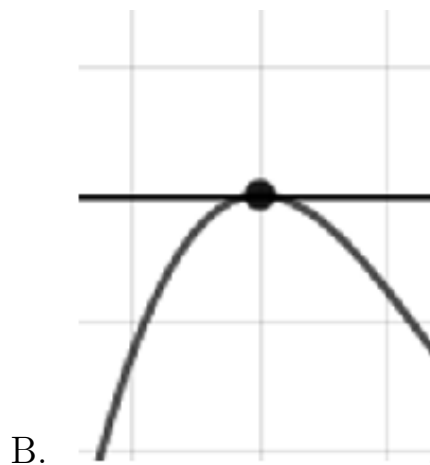
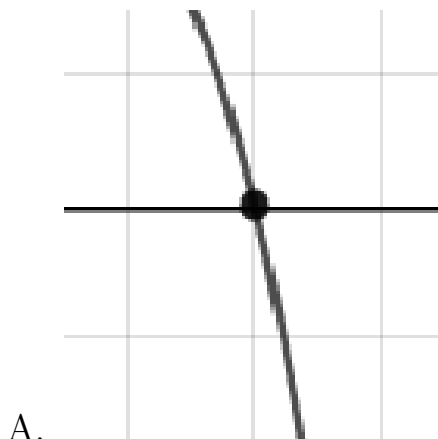
C. $a \in [100, 104]$, $b \in [-112, -104]$, $c \in [-65, -60]$, and $d \in [20, 32]$

D. $a \in [100, 104]$, $b \in [103, 115]$, $c \in [-65, -60]$, and $d \in [20, 32]$

E. $a \in [100, 104]$, $b \in [103, 115]$, $c \in [-65, -60]$, and $d \in [-21, -15]$

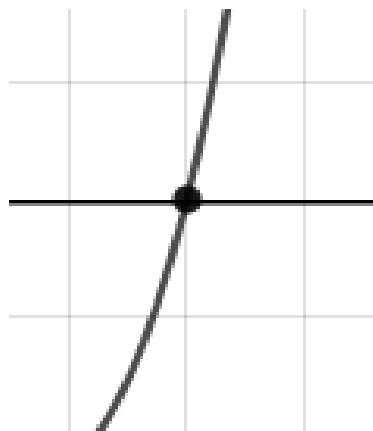
-
9. Describe the zero behavior of the zero $x = 7$ of the polynomial below.

$$f(x) = -7(x - 3)^{11}(x + 3)^9(x - 7)^{14}(x + 7)^9$$





C.



D.

E. None of the above.

10. Describe the end behavior of the polynomial below.

$$f(x) = -3(x + 9)^5(x - 9)^8(x - 3)^2(x + 3)^3$$



C.



A.



B.



D.

E. None of the above.